# Most English Morphology is Concatenative

- write+[s], drive+[z],...
- book+[s], tune+[z],...
- pre+vent, re+do, un+tie,...
- walk+[t], pave+[d],...

# Nonconcatenative Morphology: Morphological Vowel Mutation

- swim swam swum
- drink / drank / drunk
- begin / began / begun
- sit/sat; win/won; come/came; run/ran; shine/shone; find/found...
- wear / wore / worn (combination)

# A small number of English Noun Plurals

also have internal changes:

- foot / feet
- mouse / mice
- man / men
- goose / geese
- woman / women

# Arabic

| FORM | MEANING | PATTERN |
|------|---------|---------|
| kataba | to write | CaCaCa |
| ʔaktaba | to cause to write | ʔaCCaCa |
| kaatib | writing | CaaCiC |
| kitaab | a book | CiCaaC |
| kutub | boo | CuCuC |
| kitaabah | writing profession | CiCaaCah |
| kattaab | author | CaCCaaC |
| miktaab | writing instrument | miCCaaC |

# Arabic

| FORM | MEANING | PATTERN |
|------|---------|---------|
| kataba | he wrote | CaCaCa |
| katabna | we wrote | CaCaCna |
| katabuu | they wrote | CaCaCuu |
| yaktubu | he writes | yaCCuCu |
| naktubu | we write | naCCuCu |
| yaktabuuna | they write | yaCCaCuuna |
| sayaktubu | he will write | sayaCCuCu |
| sanaktubu | we will write | sanaCCuCu |
| sayaktabuuna | they will write | sayaCCaCuuna |

# Content/Lexical/Open-Class Morphemes

- express general referential or informational content
- meaning essentially independent of the grammatical system
- open to the addition of arbitrary new items
- e.g. *smurf, nuke, byte, grok, IM, chalupa, baathist*

# Functional/Grammatical/Closed-Class Morphemes

- ▶ tied to a grammatical function
- ▶ express syntactic relationships between units in a sentence, or obligatorily marked categories such as number or tense
- ▶ not usually open to the addition of arbitrary new items

# Some Typical Functional Morphemes

- prepositions: *to, by, from, with*
- articles: *the, a*
- pronouns: *she, his, my*
- conjunctions: *and, but, although*
- affixes: *re-, -ness, -ly, -ed*

# Functional Morphemes

- serve either to tie elements together grammatically (hit **by** a truck, Pat **and** Chris), or
- to express morphological features such as definiteness (e.g. She found **a/the** table vs. *She found table.)

**Inflectional morphology:** creates new forms of the same word: the core meaning is the same (e.g. walk+s and walk+ed)

**Derivational morphology:** creates new words from old ones: the core meaning might change significantly, and the resulting word will still require additional inflectional morphology appropriate to the context in which it is used. (e.g. walk and walker)

# Paradigm:

A **paradigm** is a set of grammatically related forms, e.g.

- walk+$\emptyset$/walk+s/walk+ed/walk+ing
- turn+$\emptyset$/turn+s/turn+ed/turn+ing
- download+$\emptyset$/download+s/download+ed/download+ing
- gimble+$\emptyset$/gimble+s/gimbl+ed/gimbl+ing

# A Spanish Verbal Paradigm

| vivo | I live | vives | you live | vive | (s)he/it lives |
|------|--------|-------|----------|------|----------------|
| vivimos | we live | vivís | y'all live | viven | they live |
| vivía | I lived | vivías | you lived | vivía | (s)he/it lived |
| vivíamos | we lived | vivíais | y'all lived | vivían | they lived |
| viviré | I'll live | vivirás | you'll live | vivirá | (s)he/it'll live |
| viviremos | we'll live | viviréis | y'all'll live | vivirán | they'll live |

# Inflectional Morphemes

- They do not change basic syntactic category (big, bigg+er, bigg+est are all adjectives.)
- They express grammatically-required features or indicate relations between different words in the sentence

# Inflectional Morphemes 2

- In *Pat love+s Chris*, +s marks the 3rd person singular present form of the verb, and also relates the verb to the 3rd singular subject Pat.
- *loves = love + s*
- Inflections occur **outside** any derivational morphemes (closer to the edge of the word)

# Inflectional Morphemes 3

- In *nationalization+s* the final +*s* is inflectional, and appears at the very end of the word, outside the derivational morphemes.
- *nationalization* + ∅ is the singular inflected form of a noun
- *nationalization* + *s* is the plural inflected form of a noun

- *nation* is a noun (word or stem)
- [[*nation*]+*al*] is an adjective (word or stem)
- [[[*nation*]+*al*]+*ize*] is a (derived) verb
- [[[[*nation*]+*al*]+*ize*]+*ation*] is a (derived) noun

# Derivational Morphology

- changes the part of speech (noun, verb, etc.) or the basic meaning of a word.
- VERB + ment = NOUN (judg+ment, treat+ment,...);
  NOUN + $\emptyset$ = VERB (to porch, to houdini, to grandstand, ...)
- re+activate 'activate again', un+kind 'not kind', ...

# Derivational Morphology 2

- not required by syntactic relations outside the word. (e.g. kind/unkind, use/reuse, fill/overfill,..)
- often not productive or regular in form or meaning
- derivational morphemes can be selective about what they'll combine with
- may also have erratic effects on meaning

# Derivational Morphology 3

- *hood*: occurs with just a few nouns such as *brother*, *neighbor*, and *knight*, but not with most others,

  \*friendhood, \*daughterhood, or \*candlehood.

- *brotherhood* can mean 'the state or relationship of being brothers', but *neighborhood* cannot mean 'the state or relationship of being neighbors

- Some derivational affixes are quite regular in form and meaning, e.g. *-ism*.

# Derivational Morphology 4

- Derivational morphemes typically occur 'inside' any inflectional affixes (i.e. closer to the root)

  (nation+al+iz+ation+s, govern+ment+s)

- Some English derivational morphemes are prefixes; others are suffixes.

  (pre-arrange, arrange-ment)

# Some Derivational Affixes in English

- ▶ **+ation** is added to a verb to give a noun
- ▶ **+al** is added to a noun to give an adjective
- ▶ **+ize** is added to an adjective to give a verb
- ▶ **un+** is added to certain verbs to give a verb (*tie/untie; wind/unwind*)
- ▶ **un+** is added to an adjective to give an adjective (*happy/unhappy; wise/unwise*)

# Lexicalization

- new words created by a derivational process can take on a life.
- Lexicalization: becoming an independent word.
- **re+** is added to a verb to create a new verb with the extra meaning 'again'.
  (*think/re+think; fill/re+fill*; *create/re+create*)
- Non compositional cases:
  *move/remove; turn/return; form/reform*.

# Adjectival Forms:
# Names of Countries or Regions

- ▶ Bhutanese, Chinese, Guyanese, Japanese,
  Lebanese, Maltese, Portuguese, Taiwanese
- ▶ African, Alaskan, American, Angolan, Cuban, Jamaican,
  Mexican, Nicaraguan
- ▶ Argentinian, Armenian, Australian, Brazilian, Canadian,
  Egyptian, Ethiopian, Iranian, Jordanian, Palestinian, Serbian

# Adjectival Forms:
## Names of Countries or Regions 2

- Irish, British, Flemish, Polish, Scottish, Swedish
- Afghani, Iraqi, Israeli, Kuwaiti, Pakistani
- French, German, Greek

# Adjectival Forms:
# Names of Countries or Regions 3

the word for 'citizen of X' and the general adjectival form meaning 'associated with locality X' are usually the same, but....

- ▶ Pole/Polish, Swede/Swedish, Scot/Scottish, ...
- ▶ Greenlandic/Greenlander, Icelandic, Islander, ...

# Adjectival Forms:
# Names of Countries or Regions 4

More oddities:

- a German/the Germans, an Italian/the Italians,...
- the French and the Chinese (plural), but not *a French, *a Chinese.

  *the Frenches, *the Chineses
  (not as 'citizens of'...)

# Adjectival Forms:
# Names of Countries or Regions 5

It's worse in some ways than having to memorize a completely different word in every case (like The Netherlands and Dutch), because there are just enough partial regularities to make things confusing.

# President George W. Bush

'Bushisms': see Slate magazine:
http://www.slate.com/default.aspx?id=3944&qt=Bushisms&s

# From the 1999 Presidential Campaign:

- 'If the East Timorians decide to revolt, I'm sure I'll have a statement.' Quoted by Maureen Dowd in the New YorkTimes, June 16, 1999
- 'Keep good relations with the Grecians.' Quoted in the Economist, June 12, 1999
- 'Kosovians can move back in.' CNN Inside Politics, April 9, 1999

-**ian** is made the default ending, after deletion of a final vowel if present.

follows the common model of Brazil::Brazilians and *Canada::Canadians*.

gives Bush's *East Timor::East Timorians, Greece::Grecians* and *Kosovo::Kosovians*, instead of the correct (but unpredictable) forms *East Timorese*, *Greeks*, and *Kosovars*. It's logical, but...

# Limits of Morphological Analysis

- Semantic and phonological similarity across morphemes:
  *flicker*, *flutter*, *flea*, *flimsy*, . . .
  *glimmer*, *glisten*, *gold*, *glamour*, . . .
- Analogical formations, Coinages
  *Marathon*: *talkathon, bikeathon, dialathon*, . . .
  *automatic*: *automat, laundromat, vegematic...*
  *X-OMAT* A trade name (of Kodak) that has become the generic designation of an automatic processor for X-ray films.